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Telemedicine Interventions for the Management of Diabetes: A Systematic Review and Meta-Analysis

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1. Introduction

Telemedicine is often suggested as a promising approach to support patients with diabetes [1,2]. Telemedicine interventions in diabetes may include video consultations, text reminders, telemonitoring, etc. [3,4]. However, the effectiveness of diabetes-related telemedicine interventions in regards to patient-related outcomes needs evaluation.

The rapid development within telemedicine emphasizes the need for a new review. Moreover, previous systematic reviews describing the effectiveness of telemedicine in diabetes management focus on a specific type of telemedicine [5,6], a specific type of diabetes [7,8], specific comparators [2,6], or specific outcomes [2,9]. Thus, the present review has a broad scope with an eye to performing an exhaustive review within the field. The present systematic review and meta-analysis aims to evaluate the effectiveness of telemedicine interventions versus any comparator on diabetes-related outcomes among adult patients with diabetes.

2. Method

The present review considers studies that include adult subjects with a diagnosis of diabetes (type 1, 2, or gestational). Studies that evaluate telemedicine interventions are considered. These telemedicine interventions may include various technologies, and the remote communication may be managed by various health care professionals, trained peers, or be fully automatic. The review considers randomized controlled trials comparing a telemedicine intervention to any control that does not include telemedicine. The considered outcomes include all patient-diabetes related outcomes. Peer-reviewed full-text papers in English, Norwegian, Danish, and Swedish are considered.

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A thorough search was performed in PubMed, CINAHL, EMBASE, and the Cochrane Library Central Register of Controlled Trials (CENTRAL). To provide an estimate of the treatment effect, the studies will be pooled via statistical meta-analysis.

3. Results

The search identified 11.759 potential papers. After removal of duplicates, 7.558 papers remained. These papers underwent screening (title/abstract), and 941 remained for full text reading. This resulted in a final sample of 218 papers. Preliminary results indicate that effects are limited in regards to type 1 diabetes and gestational diabetes. However, the effect in regards to type 2 diabetes shows more promise.

4. Discussion

The review is strengthened by the fact that the search of literature is very exhaustive. An expected limitation is the limited heterogeneity between telemedicine studies, as the studies differ in use of technology, organizational setup, etc., which complicates the comparison of studies.

5. Conclusion

The present review may add value to the existing evidence base by providing an exhaustive review of telemedicine interventions in diabetes. Further results will follow.

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